

Descriptions of certain species of DIURNAL LEPIDOPTERA found within the limits of the United States and British America.—No. 2.

BY WM. H. EDWARDS.

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| 1. <i>Argynnis Atlantis</i> , nov. sp. | 5. <i>Chionobas taygete</i> , Hubner. |
| 2. <i>Thecla acadica</i> , nov. sp. | 6. <i>Pamphila verna</i> , nov. sp. |
| 3. " <i>læta</i> , nov. sp. | 7. " <i>rurea</i> , nov. sp. |
| 4. <i>Lycæna neglecta</i> , nov. sp. | 8. <i>Hesperia vialis</i> , nov. sp. |

ARGYNNIS ATLANTIS, nov. sp.

Male. Expands 2 to 2 $\frac{1}{4}$ inches.

Upper side of both wings uniform fulvous, less bright than *Aphrodite* or *Cybele*, dusky near base and on costal margin of primaries; both wings have a broad black hind margin, sometimes enclosing an interrupted fulvous line next anal angle of secondaries; preceding this band and connected with it on primaries, a series of black crescents, the one next the inner angle geminate, enclosing round fulvous spots which are smallest next apex; anterior to these a transverse row of round black spots, an abbreviated black band running obliquely back from the costa, and a zigzag band across the middle of the wing; within the cell three transverse, wavy black bars, the second continued nearly to the submedian nervure, and a fourth bar on the arc, dilated at its lower extremity and there enclosing a dusky space.

Secondaries have a series of black crescents, not resting on the marginal border as in primaries, the one next the anal angle geminate, a transverse row of small round black spots, and across the middle of the wing a zigzag band ending within the abdominal margin; in the cell a black band bent like a horse-shoe; fringe yellowish white, black, with a little fulvous at the intersection of the nervures.

Under side: hind margin of both wings dark brown; disk and inner margin of primaries reddish tawny, costa and apex light buff; the black markings of upper side repeated, but more delicate; five silver triangles within the marginal crescents next apex, and preceding these on the costa two rounded silver spots on a dark brown ground.

Secondaries dark red brown, more or less mottled with drab, except the space between the two outer rows of silver spots, which is bright buff and immaculate; upon the border of hind margin seven triangular silver spots, edged below with black, and above with red brown preceded by another series of seven rounded or oval, the middle one smallest, all edged above with black; between these and the base are ten silver spots of various sizes and forms, the largest divided by the discal arc; all these, except the two anterior, edged above with black; edge of costa next base and whole abdominal margin broadly silvered; thorax and abdomen above black, covered with fulvous hairs, thorax below reddish grey, abdomen buff; palpi grey, tipped with fulvous; antennæ black above, fulvous below; club velvet black, tipped with fulvous.

Female. Expands 2 $\frac{1}{2}$ to 2 $\frac{3}{4}$ inches.

Color above less bright than the male, inclining to tawny; the black margin very heavy, and the marginal spots next apex of primaries buff, nearly white; usually a black spot next base of secondaries; under side of primaries bright fulvous; in other respects as in the male.

This species seems to be limited to the mountainous districts of the Northern States and to parts of British America. In the Catskill Mountains, near the Mountain House, I found it abundant the past season, (1861.) I have received it from the White Mountains, from Williamstown, Mass., and from Lake Winnipeg, by Mr. S. H. Scudder, and by Mr. Drexler from near Hudson's Bay. The specimens from the White Mountains and Hudson's Bay

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are diminutive in size. There is also a specimen in the cabinet of the late Dr. Harris, at Cambridge, Mass., taken by Prof. Agassiz on the north side of Lake Superior.

In the markings of its surface *Atlantis* bears a close resemblance to *Cybele* and *Aphrodite*, to *Adippe* and *Aglaia* of Europe, and to *Zerene* and *Astarte* of California. It especially resembles the three last-named species in the zigzag band which crosses the disk of secondaries, but which in *Aphrodite* takes the form of a belt of small crescents, separated by wide spaces. It is, moreover, readily distinguished from *Aphrodite* by its duller color, broad black margin to both wings and color of secondaries below. It also differs sensibly in the shape of the primaries, the margins meeting at the inner angle more obtusely, the outer angle being more acute and the breadth of the wing from the inner angle to middle of costa much less. The antennæ are shorter by one eighth of an inch.

Of the three species, *Cybele* is Southern, and in the vicinity of Newburgh, N. Y., is found but little more abundantly than *Aphrodite*. In the Catskills the latter abounds and *Cybele* is rare, much less common than *Atlantis*. From Connecticut, Massachusetts and Canada, I have seen no *Cybele*, though doubtless it is occasionally found in those districts. The prevailing Northern species is *Aphrodite*.

THECLA ACADICA, NOV. SP.

Male. Expands 1·2 inch.

Size and form of *Falacer*. Color above dark brown, costal edge of primaries rufous; in the disk a smooth oval spot; secondaries have a single tail, from the base of which a bluish white line extends along the margin to the anal angle; the space next above this line is sprinkled slightly with fulvous scales making an indistinct broad band, which ends beyond the tail in a clear fulvous spot; fringe of both wings brown, next before the tail white, beyond it black, through which runs a white line, and at the angle black.

Under side dark grey, with a pearly lustre; on primaries a short discal bar, edged with white; beyond this, a bent transverse row of black spots, each edged with white, the one next the costa minute, the next three round, fourth and fifth oval, and sixth double; within and along the margin a row of elongated, pale fulvous spots obsolete towards the apex, narrowly bordered within by black, on which rests a line of bluish white.

Secondaries have a long discal streak, a transverse row of black spots and streaks, each edged with white, the six from the costa nearly round, the next long and bent toward the anal angle, the last a streak running up the abdominal margin and bent upward at right angles near its inner extremity; hind margin edged with white and bordered by a bright red band, divided by the nervures into spots, arched above and edged with black, on which is a line of bluish white; this band extends some distance up the abdominal margin, and encloses on the hind margin, near anal angle, a large rounded space sprinkled with blue atoms; the three red spots next outer angle partly obsolete.

Taken near London, C. W., by Mr. W. Saunders.

THECLA LÆTA, NOV. SP.

Expands 9-10 inch.

Upper side of primaries black, of secondaries blackish brown; near base of primaries a few scales of metallic blue; costal edge red; next the anal angle of secondaries a broad band of metallic blue scales, many of which are replaced by black, extends half way along the hind margin; beyond the band a fine line of these scales follows the margin to the outer angle; anal angle edged with red; fringe grey.

Under side of secondaries and apex and costal margin of primaries slate blue, with a green tinge; costal edge of primaries red; disk smoke color; beyond the cell, on costal margin, a transverse, abbreviated series of fine red

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spots, edged posteriorly with white, the last two obscured by the smoky hue of the disk.

Secondaries have two series of red spots parallel to the hind margin; those of the exterior small, and towards the outer angle minute, each more or less surrounded by a delicate white border, in which are a few black scales; the inner series crosses the middle of the wing, is slightly irregular, the spots large, brighter red and crescent-shaped, bordered posteriorly with white, in which are a few black scales; edge of the wing at the anal angle and at the intersection of the adjoining nervures red; thorax and abdomen above black, beneath white.

Taken near London, C. W., by Mr. W. Saunders.

LYCÆNA NEGLECTA, nov. sp.

Expands 1.1 inch.

Male. Upper side of primaries delicate azure blue, paler in the disk and silvery on costal margin; secondaries greyish blue, with a broad azure margin; a black line edges the hind margin of both wings, expanding towards apex of primaries into a border, and running a little way along the costal margin; fringe of primaries white, cut with black by the nervures; of secondaries, sometimes barred with black, but usually wholly white.

Under side pure white, or white with a bluish tinge; primaries with a dark discal streak and a transverse series of six black streaks set obliquely; secondaries have a discal streak, three points near base and eight points or streaks crossing the disk in a tortuous line; both wings bordered by confluent spots, forming a crenated band, each spot enclosing a darker point.

Female. Upper side of both wings of a deeper and more metallic blue; primaries have a broad fuscous hind margin; in some cases this color extends along the costal margin to the base, where it is sprinkled with blue; a faint discal streak; hind margin of secondaries bordered by a row of small fuscous spots.

Under side dark grey, sprinkled with blue at the base of both wings; the fuscous spots disposed as in the male, but larger and coarser.

Variety *a*. Upper side wholly fuscous.

Massachusetts, New York, Wisconsin, Lake Winnipeg.

There are three species of *Lycæna* in North America that much resemble each other, viz.:—*Lucia* of Kirby, *Pseudargiolus* of Boisduval, and a third hitherto confounded with the later, which I described as *Neglecta*. *Pseudargiolus* resembles *Argiolus* of Europe in form, size and color above, and was considered by Abbott and Smith as identical with it. Both wings are wholly violet blue with a pinkish tinge; the under side is greyish white, and the hind margins are bordered by a broad, serrated band, the teeth of which are separated almost to their bases. This band appears as if stamped on the wing. The color of *Neglecta* is azure blue on primaries, of secondaries grey blue, with an azure margin; the under side is pure white or bluish white, and the marginal band is confluent and serrated. *Lucia* is uniform light silvery blue above and cinereous below, with a border as in *Neglecta*. The number, shape and arrangement of the spots on the under side of these species are similar, mostly differing in degree of fineness; in *Pseudargiolus* they are very delicate; in *Neglecta* much less so; in *Lucia* heavy and coarse. *Pseudargiolus* varies much in size. It appears to be rather a Southern species. It is common on the mountains of Western Virginia, and is occasionally met with in New York. *Neglecta* is common in New York, and I have received it from Wisconsin and from Lake Winnipeg. *Lucia* seems to be confined to the Northern parts of the continent. I have received from Mr. Drexler a female of *Chionobas Taygete* (*Encis Taygete*) of Hübner, taken at Albany River, Hudson's Bay, which agrees with Hübner's figure, but differs from *C. Bootes*, described by Boisduval and Le Conte as identical, and from the figure of *Bootes*

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in Boisduval's spec. gen. Boisduval, in his *Icones*, figures *Taygete* and calls it *Bootes* without any reference to Hubner. *Bootes* is an European species, *Taygete* an American only, and the priority of name belongs to Hubner. The only description we have, therefore, being incorrect, I described *Taygete* from Mr. Drexler's specimen. Herrich-Schaeffer, *Lep. Eur.* f. 112, gives *Taygete* as same with Boisduval's *C. also*. But *C. also* is *Hipparchia semidea* of Say, a species as yet only known to be found in the White Mountains of New Hampshire. Boisduval's description was taken from a single specimen forwarded by the late Dr. Harris to Major Le Conte with Say's name, which should have been retained. *C. semidea* appears to have been lost sight of, and doubted as a species for many years, till, in 1857, Mr. Scudder found it abundant on the summit of Mt. Washington.

CHINOBAS TAYGETE.

Oleis Taygete, Hubner.

C. Bootes, Boisduval and Le Conte.

C. Bootes, Boisduval in *Icones*.

Female. Expands 2.2 inches.

Upper side ochrey brown, both wings, from the base to beyond the cell, clouded with black, which makes externally an irregular outline, crenate in the median interspaces of primaries; hind margin of both wings and apex of primaries bordered with dark brown; between this and the clouded space a broad common band, in which, on the primaries, are three black pyriform spots, the first being between the discoidal nervules and the others in the two spaces between the median nervules; a small round black spot in the anal angle of secondaries; costal margin of primaries sprinkled with black and grey.

Under side: primaries paler, the whole wing marked by fine, transverse, abbreviated streaks of dark brown, most dense in the cell; spots as above; costa barred with grey and black; a heavy black line corresponds nearly to the dark outline of clouded space above, but wants the crenations and projects on the second discoidal nervule into an acute angle.

Secondaries wholly mottled and streaked transversely with grey, light brown and black, the latter color predominating next the base, and light brown on the hind margin; a broad band crosses the disk, black on the edges, the inner edge angular, the outer sinuous; a minute black spot in the anal angle; nervures grey and prominent.

Albany River, Hudson's Bay, by Mr. Drexler.

PAMPHILA VERNA, nov. sp.

Expands 1.2 inch. Size and form of *Otho*.

Male. Both wings dark glossy brown; body covered with greenish hairs; on costa of primaries near apex a yellowish spot, divided into three by the nervures, on the disk an oblique black bar, posterior to which, and running with it from the middle of the inner margin, are three yellowish, translucent spots, the anterior minute, the next a parallelogram, the third separated from the second by a wide space.

Beneath dark brown, with a purple reflection; same spots on primaries as above, but enlarged; across the disk of secondaries an obsolete row of points, thorax grey; abdomen, head and palpi whitish.

Female. Same color; the oblique band of yellowish spots varies, the second being nearly square and preceded by an additional small spot at its upper inner angle. Beneath lighter brown; the obsolete points on secondaries of the male become distinct yellow spots, crossing the wing two-thirds the distance from the abdominal margin, when they bend at right angles, and run nearly to the costa.

Illinois, from Mr. Walsh, Washington.

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PAMPHILA EUREA, nov. sp.

Expands 1.1 inch.

Male. Color above and below dark glossy brown; on primaries an oblique black bar.

Female. Same color; on the costa of primaries, near the apex, a yellowish spot divided into three by the nervures, and two small spots near middle of the wing; all these are repeated below, and on the disk of secondaries are four obsolete points in a transverse line.

Rock Island, Illinois, from Mr. B. D. Walsh.

HESPERIA VIALIS, nov. sp.

Expands 9-10 inch.

Color fuscous; the only markings are four fine, yellowish-white spots on costa of primaries near apex; fringe long, color brown, barred with black by the intersection of the nervures.

Under side darker, with a purple reflection on apex of primaries and hind margin of secondaries; thorax grey, palpi light grey.

Rock Island, Illinois; Lake Winnipeg.

Description of a New *CARDIUM* from the Pleistocene of Hudson's Bay

BY WM. STIMPSON.

CARDIUM DAWSONI.

Cardium islandicum Stimpson, (non Chemn.) Proc. Acad. Nat. Sci., Phila., 1861, p. 97.

Shell subovate, oblique, very inequilateral, and somewhat angular posteriorly; beaks small and much elevated; hinge thin; teeth weak, especially the posterior ones; ribs about thirty-five in number, in the anterior part of the shell narrower than their interspaces, in the middle and posterior parts broader and more flattened; ventral margin crenated.

Length 1.63; height 1.53; convexity, or breadth, 1 inch. Imperfect specimens indicate a larger size.

This shell resembles *C. islandicum*, (*ciliatam* O. Fabr.) in the characters of the hinge, but is easily distinguished by its obliquity and the great elevation of its small beaks, the prominence of which gives

an angularity of outline to the umbonal slope, very different from the evenly rounded and more depressed slope of the recent shell. The posterior extremity also is much less rounded, and in some specimens the posterior and ventral margins form nearly a right angle with each other. The ribs are not acute as in *C. islandicum*, but more or less flattened, and generally broader than their interspaces. From *C. decorticatum* S. Wood, of the English crag, this species differs in its thinner hinge and weak teeth; from *C. interruptum* of the same author, and formation, by its greater obliquity, and the prominence of the beaks.

Our specimens all present a character which may perhaps be considered specific; that of broad concentric bands of erosion, separated by corresponding crenulated ridges, indicating periods of arrest of growth in the shell, at which periods the margins, being slowly formed, were of stronger substance than when the deposit proceeded more rapidly. These periods were probably annual, occurring in winter.

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